Facilitating learning and change in physicians: Implications for a system of continuing medical education in Europe

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In the presence of conflicting evidence, recent research has altered the view of the nature of continuing medical education (CME) in North America. These changes in perspective have brought about a new focus and dramatic implications for the ways that learning activities should be planned, managed and recognized. These changes have also fostered opportunities for new and better ways to identify and award credit for CME.

In the late 1970s and early 1980s, the high cost of CME and increasing efforts to account for the impact of CME on physicians behavior and patient health led to hundreds of published evaluation studies. Most of these studies were modelled on traditional medical research. They were directed toward a test of the hypothesis that, as CME participation increases, changes in practice will increase. The results of these investigations were divided almost equally between those that documented a true difference after a CME program and those that did not. Little progress was made in evaluating the true consequences of CME [1].

One study drew considerable attention because of its careful design. Sibley and colleagues [2] used a randomized control-group design to study the effectiveness of a CME program on 16 family physicians in Canada. Data on patient-care consequences were extensive, as were analyses. The authors described a difference of 10% more changes in patient care among respondents who participated in CME compared with those who did not. However, this level of change was not considered meaningful by the authors, who attributed the "failure" of the program to a flawed principle of adult education, specifically, the presumption that people are more likely to change if they are interested in the subject.

These results highlight an important problem endemic to this and many other investigations, namely, reliance on a narrow set of assumptions underlying the definition. In the old view of CME, it was assumed that: 1) Emphasis should be on formal classroom events as the primary means for causing learning; 2) Quality is determined by the past performance and resources of CME sponsors; 3) Clinical experience is not an avenue to high-quality learning; 4) Attendance at CME events is a measure of efforts to develop enhanced competence; and 5) Teachers are in control of quality.

Publication of the study by Sibley and coworkers and increasing pressures for accountability at all levels prompted a large-scale study sponsored by the Society of Medical College Directors of Continuing Medical Education [3]. The study involved the collection of information through interviews with a random sample of North American physicians. The interviews lasted from 30 min to 1.5 h, and were conducted in the clinical-practice settings of the subjects. The interviewers elicited 775 reports of changes made by these physicians, and inquired into the natural history of motivation and learning activities related to these changes. The explicit purpose of the study was to develop an explanation of how and why learning activities become associated with changes in medical practices. For this reason, the interviewers were drawn from the faculties of academic medical centers, and were trained extensively in interviewing methods and techniques. Because the purpose of the study was to explain the ways in which learning is related to change rather than to test an existing theory, qualitative analysis

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using techniques of grounded theory was applied to the findings.

The results were summarized in the form of a model of the relationships among forces for change, images of change, self-assessment, and the development of self-directed curricula for change. Physicians described a world of pressures and stimuli from their personal lives, social lives and professional practices that fueled the process of change. These forces for change ranged from curiosity to new government regulations but, most frequently, were motivated by the physician's sense of what was required to practice at a level of performance consistent with standards for quality care or, more often, at a higher level characteristic of expert clinicians.

These forces for change generated images of what medical practice would be like if changes were made. These mental pictures of changed practices varied from clear and predictable to ambiguous and unpredictable. Sometimes the image was unclear because the reasons for change were unclear or, sometimes, because the outcome was poorly understood or unknown. These images of change affected the development of each step in the process of change, the duration of the change process, the way the physicians assessed their needs for learning new knowledge or skills, and the kinds of resources used to learn and the way such resources were combined in later stages of the process.

Once an image for change developed, the physicians described a process of self-assessment in which they evaluated their present level of competence and performance by comparing it with the level of competence and performance required to accomplish the change. Sometimes, this was accomplished without regard to actual evidence of any discrepancy. In other cases, they reported using colleagues, self-assessments or other forms of formal assistance to understand the nature of their need to learn and change.

Self-Directed Curriculum

	Human Resources	Material Resources	CME Programs
Assessing the need for new competence	***Partner***	***Journal***	***Rounds***
Gaining new competence	***Other specialist***	***Texts***	***Annual meeting***
Implementing new competence	***Partner***	***Reference manual***	***Regional meeting***

Figure 1 Stages and resources in the self-directed curriculum.

In many cases, the initial assessment was followed by attempts to pursue an informal curriculum to make the change in practice. For this purpose, a curriculum may be considered to be a pattern of learning resources combined to achieve a learning objective (Figure 1). The term 'self-directed' is used to emphasize that it is the learner who makes the decisions as to what is included in the curriculum to achieve a specific kind of change.

The first stage of a self-directed curriculum is devoted to gathering the information, knowledge and skill necessary to understand the extent and level of need related to the change. In effect, physicians at this stage are concerned with answering the question, "Do I have the abilities to make this kind of change in my practice?" At this stage as with all stages, it appeared that physicians use up to three categories of resources to learn about their present level of competence in relation to the change: other health professionals (most often other physicians); books and other 'hard' resources (most often journals); and formal educational events (CME programs). Each of these resources was described as a valuable tool for learning, albeit for different reasons, and all were related to trust in the sources of information. Colleagues were viewed as trustworthy because they were most likely to understand the practical conditions associated with a change. Reading materials, especially journals, were considered trustworthy because they were objective and distant from the individual practitioner, and CME was viewed as a combination of objectivity with the opportunity to incorporate a practical context to their learning about a change.

The second stage of a self-directed curriculum is entered when a physician has decided what and how much learning is needed to make the change. This stage is directed towards building the knowledge and skill to fill the gaps so that the change can be implemented. Once again, up to three different types of resources contribute to building the physician's competence.

The last stage is when what the physician has learned in the earlier stages has not been applied to a practical context or when the new knowledge and skills require adjustment to accommodate the particular setting, resources, patient population or practice patterns of the physican. The question around which learning was organized was: "What do I need to be able to do to make this change fit with my practices in this setting?" The pattern of learning resources used at this stage reflect the need to integrate academic and

scientific information with practical considerations. Often, this means learning more about how to present the change to colleagues, staff, administrators and/or patients; what other kinds of clinical support might be necessary; how to be reimbursed for the procedure; and what precautions must be taken in the frail or chronically ill.

The self-directed curriculum appears to describe a natural process of learning that works in a manner similar to following a diet. Although a dietary pattern may not be consciously followed, it is certainly systematic and patterned according to factors which range from time of day to cultural habit. Similarly, learning appears to be somewhat unconscious but systematic, varying according to such factors as forces for change, image of change, level of need and availability of resources.

Although some follow-up studies have confirmed the above description, more studies are currently underway to clarify how learning to make changes actually works in practice. Some of these studies focus on the role of clinical experience or on the adoption of particular innovations as a kind of change in practice whereas some address the extent of the use of specific resources to make specific changes, such as in the diagnosis and treatment of depression or the use of non-steroidal anti-inflammatory drugs. However, most investigators approach these studies from the perspective of adult education.

These studies of change and learning in physicians have altered the perception of CME by scholars and the approach to CME in North America. There has been a shift in perspective from the power of educational events to the power of the learner (Figure 2) [3,4]. Thus, this new approach has a different set of underlying assumptions, including: 1) Learning is the primary vehicle for enhancement of competence; 2) CME programs constitute one type of resource for learning; 3) Each learning event stands on its own merits; 4) Quality is embedded in the processes that learners and providers use to design learning activities; 5) Clinical experience is the primary avenue to high-quality learning; 6) High-quality CME is based on the extent to which it conforms to the standards associated with high-quality learning; and 7) Learning that is clinically based and supports appropriate modifications of practice is the highest form of CME.

These assumptions place the process of learning and the needs of learners at the top of the list of priorities. They also suggest that CME be developed as an agency of change and that the expert serve as a partner to the practitioner in the process of learning and change. The study of learning and change has also established that CME can play a more important role in facilitating these processes if it is designed to better meet the needs of physicians. A new approach to CME must be as complex as the change it fosters. It must facilitate the accurate assessment of need, provide a

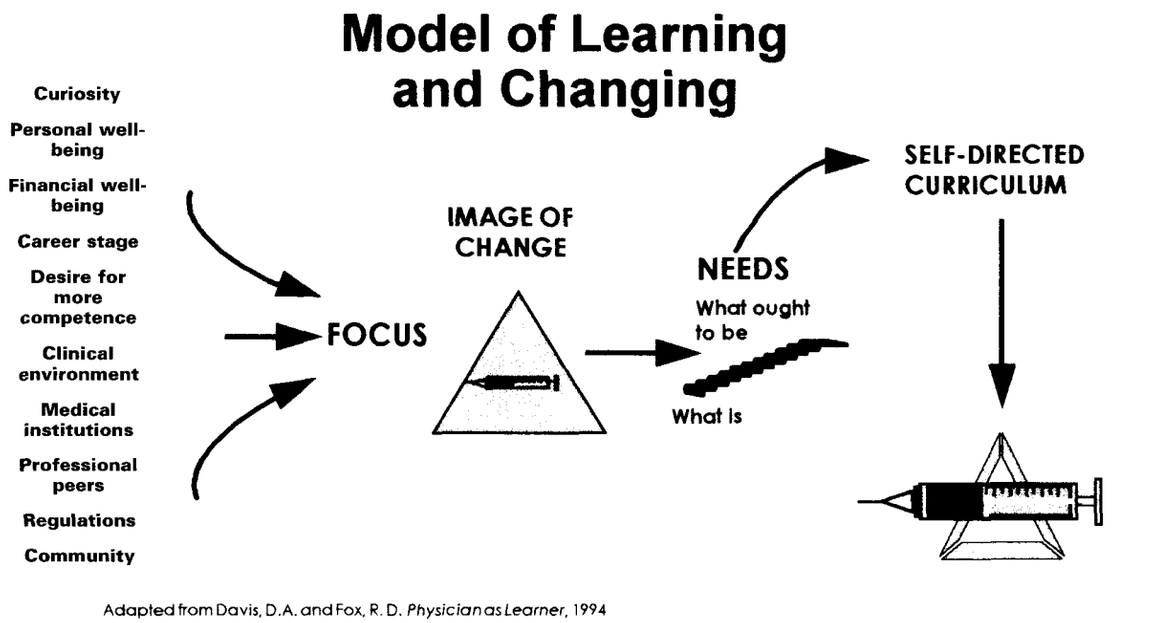

Figure 2 Model of learning and changing.

clear image of the changes it seeks, organize and apply a variety of resources to fit the learners' need for trustworthy information, and provide feedback on progress throughout the process of learning and change. The incentive for these kinds of changes in CME is the increased likelihood that better medical practices and patient outcomes will follow.

The change in the basic structure of CME in North America has major implications for what constitutes quality in continuing education for physicians. Some systems that assign or hold records of CME credits have been affected by the change in perspective. There have been changes not only in medicine, but also in other professions that are heavily dependent on lifelong learning for professional development and high-quality service to clients.

In the past, accreditation of CME programs has focused on endorsements of the quality of program providers. The model for this has been institutional accreditation. The assumption was that, if the institutional sponsor had the right resources and organized those resources according to an approach or process consistent with a set of criteria, then the quality of future programs was assured. Consequently, valuable CME credits came to be associated with the attendance of physicians at conferences, seminars or short courses provided by accredited sponsors. Time was the fundamental measure of learning activity and credit was a function of the quality of the historical processes and resources of the sponsor.

Such a system has several important weaknesses in the light of recent research into how physicians actually use learning to make changes in their practices. The Royal College of Physicians and Surgeons of Canada was probably the first major organization of physicians to recognize the problem; they responded by developing the Maintenance of Competence Program (MOCOMP), the first system of accreditation that elevated the status of self-directed learning to a level equal to that of the institutionally sponsored offerings [5,6]. A number of other professional groups have endorsed similar programs or pilot projects that allow professionals to receive credit for self-directed learning (Table 1). However, the definitions of self-directed learning differ in substantial ways.

Some of the criteria listed in Table 1 are particularly important to the future of CME in Europe. Although all systems award recognition for participation in CME programs, only a few offer credit for self-directed learning. The Royal College of Physicians and Surgeons of Canada recognizes self-directed learning as part of the process of change and accepts documentation based on a personal diary. Both the American Institute of Architects and American College of Veterinary Pathology apply criteria for needs assessment, interaction and feedback, among others, to assign more or less credit according to whether these criteria are met in either CME or self-directed curricula. The American Medical Education Unit awards credit based on time spent rather than on the quality of the learning process.

Recognition of self-directed learning is vital where there are few opportunities to attend formal programs. Whereas some countries have only limited opportunities, in other countries they are numerous. As migration across borders becomes more commonplace, recognition must also cross international borders. Self-directed activities that are recorded at a central 'clearing

Table 1 Comparison of various CME systems according to the optimal criteria for an accreditation system

Criterion	CEU	ACCME	MOCOMP	AIA	ACVP
Developed in collaboration with learners	No	±	Yes	Yes	Yes
Professional members' participation is voluntary	Yes	Yes	Yes	No	Yes
Awards credit for self-directed learning	No	±	Yes	Yes	Yes
Based on research into physician learning	25 years old	10 years old	Yes	Yes	Yes
Teaches physicians better ways to learn	No	No	Yes	Yes	Yes
Accepts the value of variety	±	±	Yes	Yes	Yes
Rewards higher-quality learning activities with more credit for less time in class	No	No	Yes	Yes	Yes
Awards credit regardless of borders	No	No	Yes	Yes	Yes
Awards credit based on programs/learning activities (not providers)	No	±	Yes	Yes	Yes

CEU = continuing education unit used by other health professionals; ACCME = Accreditation Council for Continuing Medical Education credit awarded through American Medical Association system; MOCOMP = credit awarded through maintenance of competence program by the Royal College of Physicians and Surgeons of Canada; AIA = American Institute of Architects; ACVP = American College of Veterinary Pathology.

house' can facilitate this process although, without a means to control poor-quality learning and to reward high-quality learning, such records will be meaningless.

Although application of the lessons of research to physician learning is an essential condition for the design of high-quality learning activities, it is also important to develop a system within the conditions characteristic of the culture of medicine and healthcare in Europe. Perhaps the most valuable suggestion to emerge from the North American experience of CME is that pilot projects to develop a system for physician learning are necessary to ensure ultimate success. A limited pilot project that allows evaluation and modification before widespread implementation may permit the development of a system that can meet the diversity of physicians' needs as learners as well as the different medical care systems within the European Community. Such a system should recognize that all forms of learning contribute to improvement in patient care regardless of source, and that medicine and medical progress are intellectual as well as practical activities that include, and also extend beyond, the confines of the classroom. Quality learning and quality medical care are so thoroughly intertwined that each fosters the other. Standards for recognition of CME must permit and encourage high-quality learning regardless of political borders.

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